Vulnerability Assessments: What's Applicable at the Federal Level?

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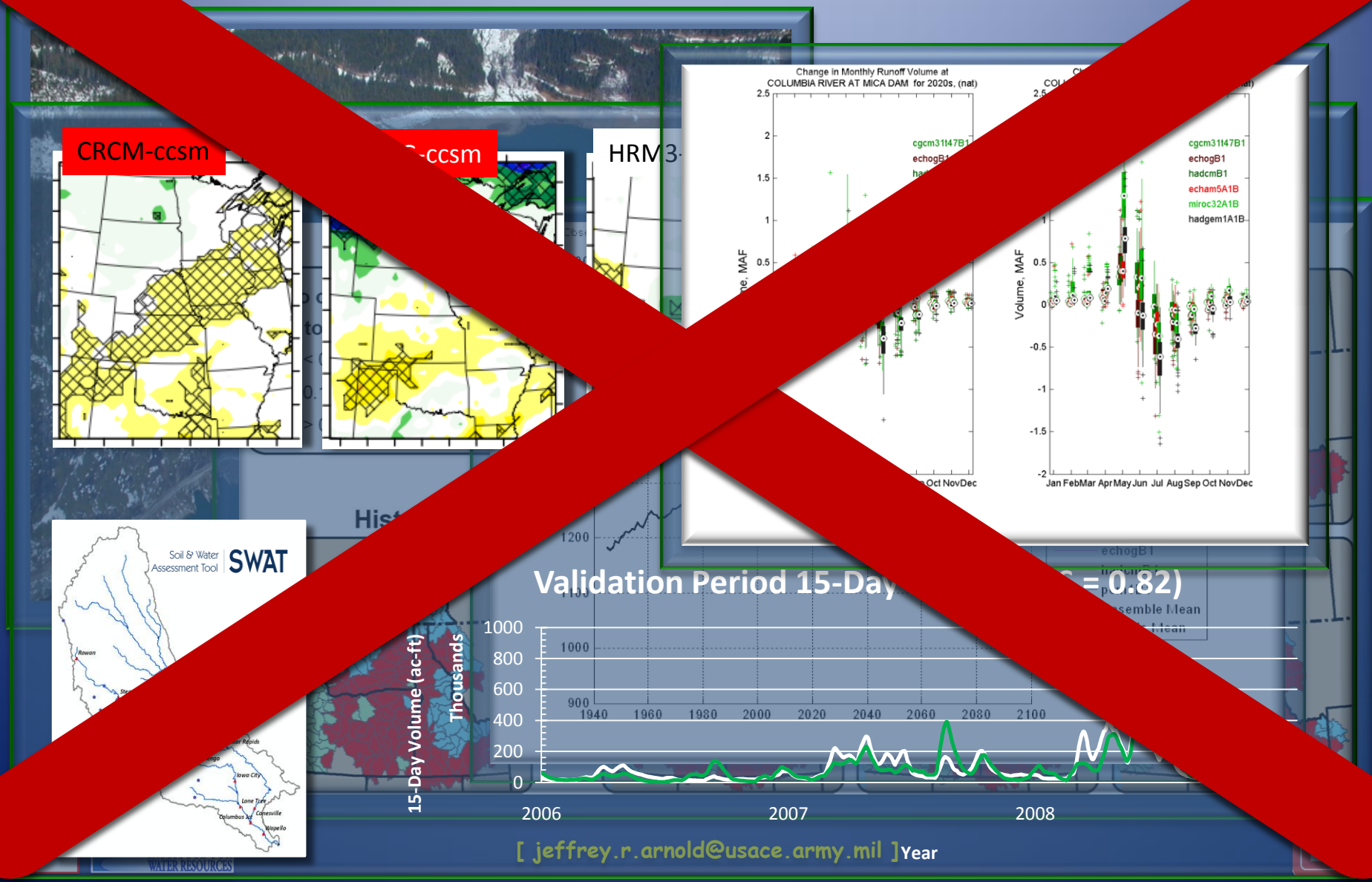
What's Intended with the CEQ High-level Vulnerability Analysis?

- ✓ identify priorities for future assessment and implementation
- ✓ provide initial or increased awareness of potential climate change impacts to agency operations, policies, and programs
- ✓ Emphatically NOT a detailed vulnerability assessment of specific programs, projects, or regions

What's Intended with the CEQ High-level Vulnerability Analysis?



What's in a Vulnerability Assessment (Analysis)?

VULNERABILITY ASSESSMENT

Exposure

- **Exposure to key hazards or threats**
  - health and safety hazards
  - economic & environmental threats
- **Exposure of key populations & resources**
  - people in harm's way
  - infrastructure in high risk areas
  - natural resources at risk

Sensitivity

- **Sensitivity to potential effects of hazards**
  - increased flood frequency or depths
  - changing resource demands & supplies (water, energy)
  - habitat migration
- **Sensitivity of populations & resources**
  - demographic strength & vulnerability factors
  - infrastructure condition & codes
  - ecosystem health and stressors

Adaptive Capacity

- **Adaptive capacity of populations and resources to respond to impacts**
  - plans, policies, strategies in place
  - monitoring & evaluation
  - flexible strategies

Impact Assessment

Slide courtesy of Sandy Eslinger, NOAA

Climate-A continuum and an adaptation deficit

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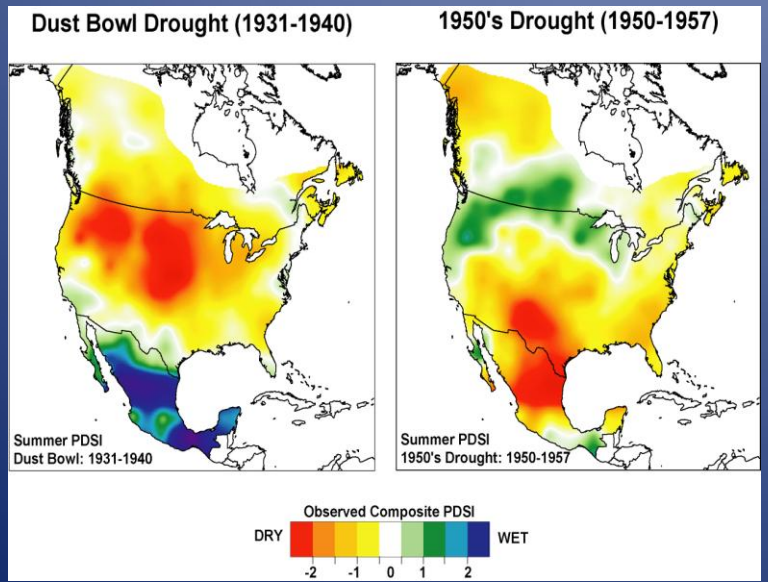

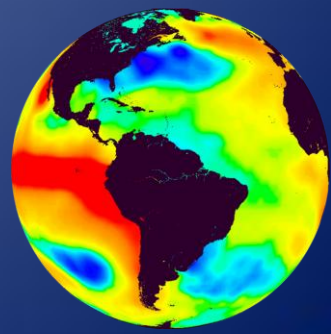

(slide courtesy of Roger Pulwarty, NOAA)

What would “adaptation” address?

The threat already posed to society from today’s climate variations

Climate-sensitive development paths that might put greater population, ecosystem services, and economies at risk

The potentially high-impact but still critically uncertain additional risks presented by climate change

Courtesy of Roger Pulwarty, NOAA)

Entry Points for Science all along the way….

What are the climate trends most likely to affect land, water, and coastal resources now and in the future?

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How will they affect the ability of my agency to manage water resources, land, and ecosystem services for future generations?

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What is most at risk, what are the factors that contribute to vulnerability across temporal and spatial scales; what are the sources of resilience?

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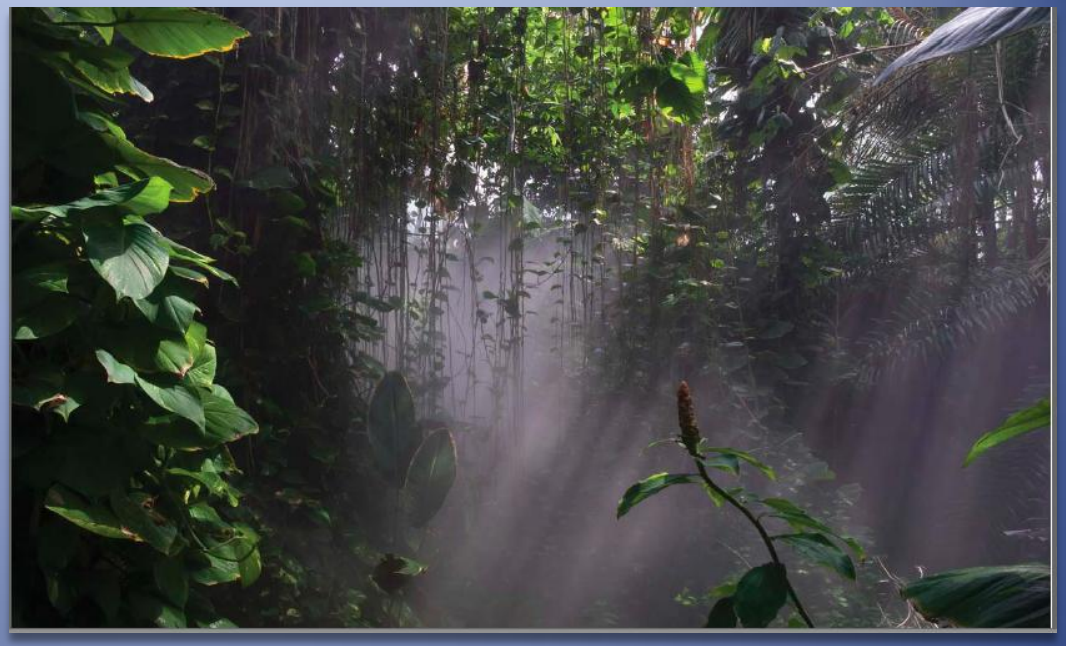
What is at risk, what are the factors that make it vulnerable, what are the sources of resilience, and

How do we begin to prioritize actions to build resilience and adaptive capacity as the climate changes? How can we show the benefits of these actions at the agency level?

Science for Natural Resource Management under Climate Change



ISSUES IN SCIENCE AND TECHNOLOGY; Summer 2011

Patrick Gonzalez, NPS

Among other factors, “lack of targeted climate science information constrain(s) full integration of climate change into natural resources management.”

Don’t get too overwhelmed or caught up in the details of climate change projections at this stage…

…Assessment products and processes

…Existing and emerging coordinated research

…Extension; services

Best Starting Point

How has climate changed?

How is it likely to change in the future?

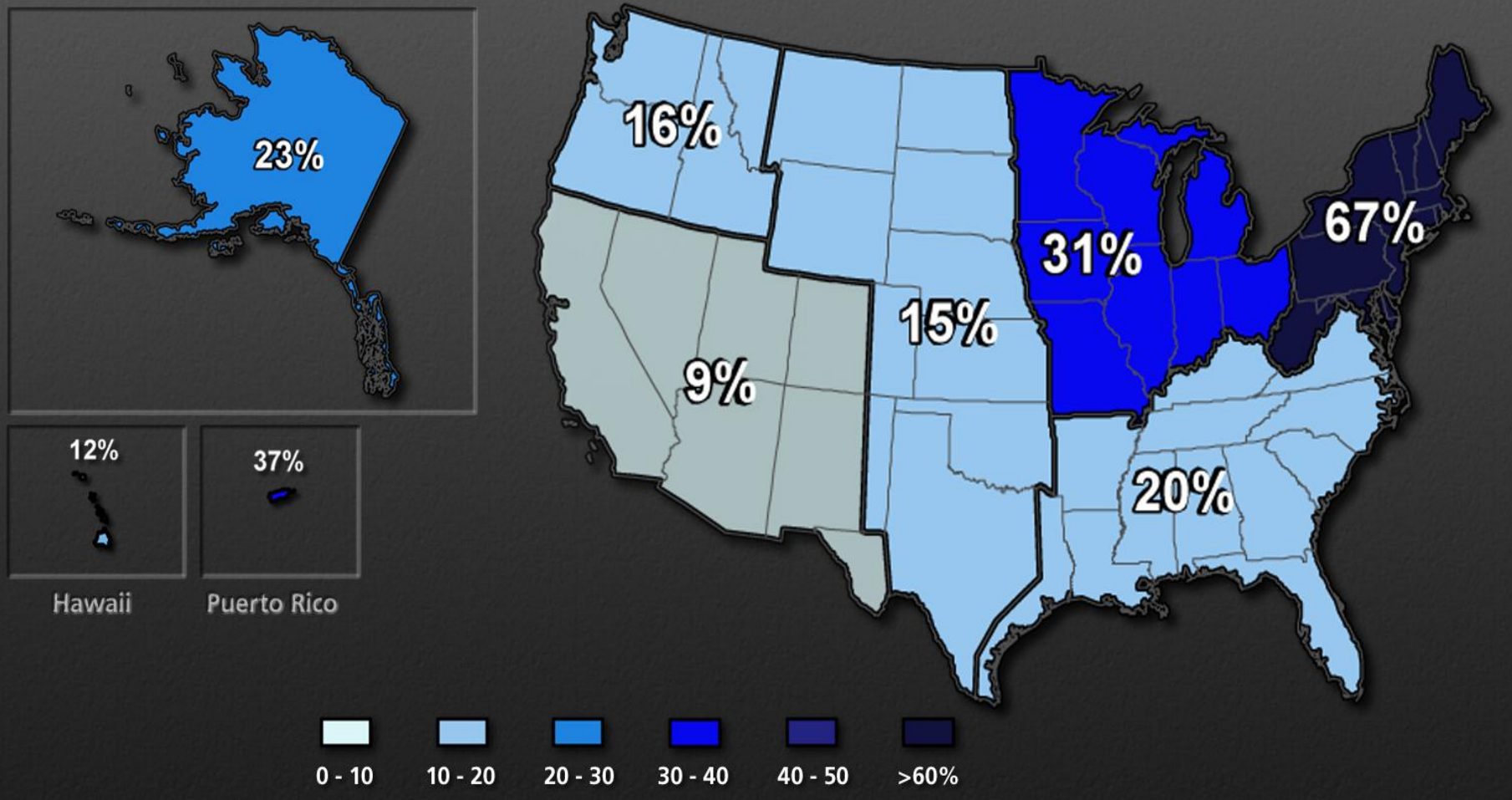
How is climate change affecting us now where we live and work?

How is it likely to affect us in the future?

Sectors and Regions

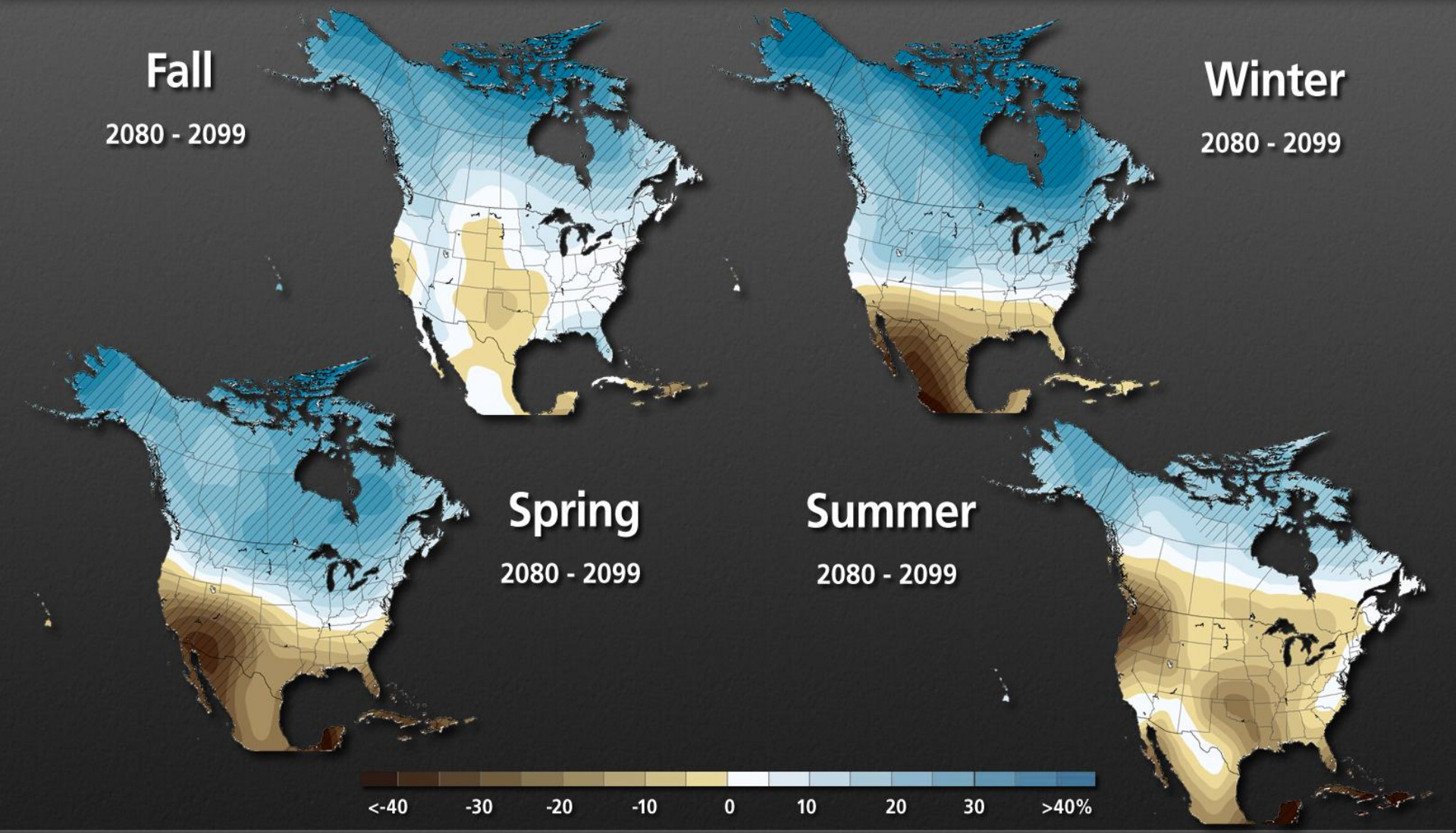
Increases in Amounts of Very Heavy Precipitation 1958 to 2007

Percent Change



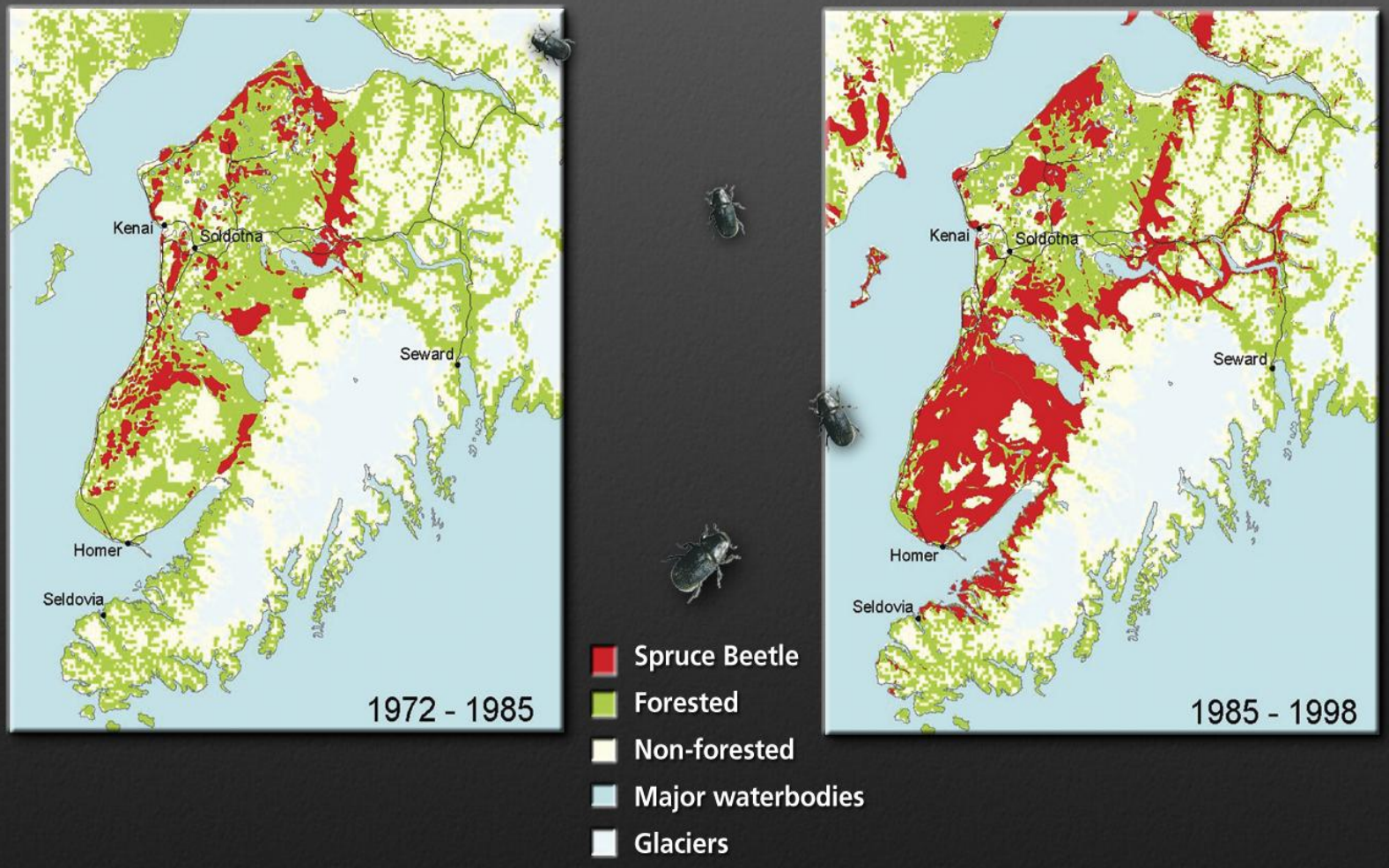
Projected Change in North American Precipitation

Percent Change



Alaska Spruce Beetle Infestation

Kenai Peninsula (1972 to 1998)



Existing and Emerging Federally-Coordinated Regional Science Resources

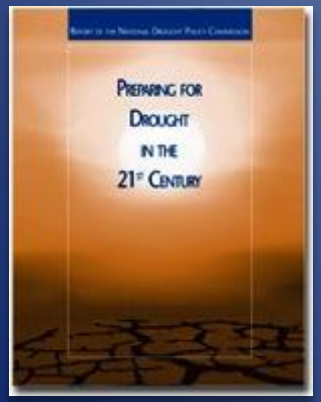
Alaska -- The Climate Change Executive Roundtable (ACCER) was established in 2007 as a forum for the Federal and State science agencies in Alaska to share information about climate change.

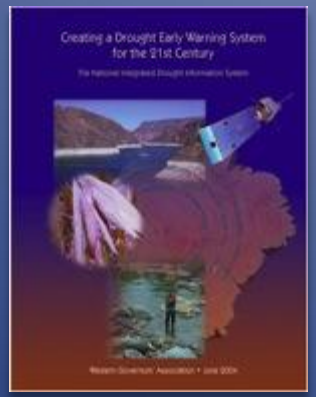
- Down-scaled climate data and physical parameter monitoring networks
- Sea level rise and physical hazard assessment
- Forecasting species and habitat changes
- Data integration and collaboration

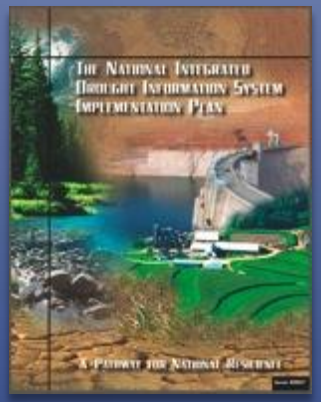
- PNW – Climate Decision Support Consortium
  - Integrated scenarios of future climate, hydrology, land-cover and socio-economic actions
  - visualization tool for regional planning and environmental assessment
  - Climate work also will support ecosystem management, evaluating wildfire risks, creating risk maps of coastal hazards incorporating changing storm intensity and sea-level rise,

NIDIS: Creating a drought early warning information system

- Public Law 109-430 (The NIDIS Act 2006)
  - "Enable the Nation to move from a reactive to a more proactive approach to managing drought risks and impacts"
  - "better informed and more timely drought-related decisions leading to reduced impacts and costs"







- NIDIS Objectives
  - **Coordinating** national drought monitoring and forecasting systems
  - Providing an **interactive drought information clearinghouse** and delivery system for products and services—including an internet portal and standardized products (databases, forecasts, Geographic Information Systems (GIS), maps, etc)
  - Designing mechanisms for improving and incorporating information to **support coordinated preparedness and planning**

Drought and Water Resources:
Federal Partnerships (States, Tribes, Urban, other)

Early Warning Information in support of Adaptation

Extension, Services, Planning Resources

U.S. Global Change Research Program
www.globalchange.gov

US FS Climate Change Resource Center:
http://www.fs.fed.us/ccrc/

www.doi.gov/whatwedo/climate/adaptation

Climate.gov

Drought.gov

Coastal Services Center's "Digital Coast"
http://www.csc.noaa.gov/digitalcoast/

http://sgccnetwork.ning.com/page/climate-resources